

104 Referring to Figures 11A, 11B, and 11C, the fully drawn line in each of Figures 11B and 11C illustrates a smooth transient response characteristic with the benefit of the present invention to a step-like increase of VAPO as illustrated in Figure 11A. The dotted line in each of Figures 11B and 11C illustrates a transient response characteristic without the benefit of the present invention.

IN THE CLAIMS:

In accordance with 37 C.F.R. § 1.121(c)(1), please substitute for original claims 1, 2, 4, 5, 7, and 8 the following rewritten versions of the same claims, as amended. The changes are shown explicitly in the attached "Version with Markings to Show Changes Made."

05 1. (Amended) A method for controlling intake air of an internal combustion engine, the engine having at least one combustion chamber provided with an intake valve together with an intake manifold provided with a throttle valve, wherein the opening and closure timings of the intake valve are adjustable independently from a crankshaft position to control the amount of intake air supplied to the combustion chamber, the method comprising:

damping an operating signal for the intake valve relative to a change in acceleration or deceleration demand on the engine, for unthrottled intake air control.

2. (Amended) The method as claimed in claim 3, wherein the step of providing the response adjustment comprises:

providing an engine response performance during unthrottled intake air control as much as an engine response performance during throttled intake air control.

06 4. (Amended) The method as claimed in claim 3, further comprising:

determining a first operation variable indicative of a target intake air;

determining a second operation variable indicative of a target valve timing based on the first operation variable;

wherein the step of providing the response adjustment comprises:

processing the second operation variable to cause the response adjustment.

5. (Amended) A system for controlling intake air of an internal combustion engine, the engine having at least one combustion chamber provided with an intake valve together with an intake manifold provided with a throttle valve, wherein the opening and closure

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timings of the intake valve are adjustable independently from a crankshaft position to control the amount of intake air supplied to the combustion chamber, the system comprising:

a control for damping an operating signal for the intake valve relative to a change in acceleration or deceleration demand on the engine, for unthrottled intake air control.

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7. (Amended) A method for controlling of intake air of an internal combustion engine, the engine having at least one combustion chamber provided with an intake valve together with an intake line having variable flow area dimensions, outside of the intake valve, determined by a throttle, wherein the opening and closure timings of the intake valve are adjustable independently from a crankshaft position to control the amount of intake air supplied to the combustion chamber, the method comprising:

determining a first operation variable indicative of target intake air;  
determining a second operation variable indicative of a preliminary valve closure timing for unthrottled intake air control based on the first operation variable;  
processing the second operation variable to provide a response adjustment to give a processed second operation variable;  
varying the valve closure timing of the intake valve to close the intake valve at a valve closure timing indicated by the processed second operation variable,  
wherein the intake valve is closed in a dampened fashion in response to a change in acceleration or deceleration demand on the engine.

8. (Amended) A computer readable storage medium having stored therein data representing instructions executable by a computer to implement unthrottled control of intake air of an internal combustion engine, the engine having at least one combustion chamber provided with an intake valve, wherein the opening and closing times of the intake valve are adjustable independently from a crankshaft position to control the amount of intake air supplied to the combustion chamber, the computer readable storage medium comprising:

instructions for determining a first operation variable indicative of target intake air;  
instructions for determining a second operation variable indicative of a preliminary valve closure timing for unthrottled intake air control based on the first operation variable;  
instructions for processing the second operation variable to provide a response adjustment to give a processed second operation variable;

instructions for varying the valve closure timing of the intake valve to close the intake valve at a valve closure timing indicated by the processed second operation variable,

wherein the intake valve is closed in a dampened fashion in response to a change in acceleration or deceleration demand on the engine.

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Please add the following new claims:

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9. (New) The method according to claim 1, wherein the operating signal is for timing the opening and closing of the intake valve.

10. (New) The method according to claim 1, wherein the operating signal is for regulating the air intake into the combustion chamber.

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